U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

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IDENTIFICATION OF SELECTED FEDERAL ACTIVITIES DIRECTED TO CHEMICALS OF NEAR-TERM CONCERN

(BENZENE, BIS (CHLOROMETHYL) ETHER, CADMIUM HYDROGEN SULFIDE, MERCURY, PLATINUM, POLYNUCLEAR AROMATIC HYDROCARBONS, TRICHLOROETHYLENE TRIS(2, 3-DIBROMOPROPYL)

ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

SEPTEMBER 1976

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This Report is intented to assist Federal agencies and other interested organizations obtain current information on the on-going activities of EPA directed to selected chemicals of near-term concern. In addition to identifying the principal EPA programs related to these chemicals, the Report also includes significant activities of other organizations when that information is available.

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SEPTEMBER 1976

OFFICE OF TOXIC SUBSTANCES

U.S. ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

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IDENTIFICATION OF SELECTED FEDERAL ACTIVITIES DIRECTED TO CHEMICALS OF NEAR-TERM CONCERN (Benzene, Bis(chloromethyl) Ether, Cadmium, Hydrogen Sulfide, Mercury, Platinum, Polynuclear Aromatic Hydrocarbons, Trichloroethylene, Tris(2, 3-dibromopropyl) Phosphate)

Prepared by the

OFFICE OF TOXIC SUBSTANCES

U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEPTEMBER 1976

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PREFACE

This Report is intended to assist Federal agencies and other interested organizations obtain current information on the on-going activities of EPA directed to selected chemicals of near-term concern.

In addition to identifying the principal EPA programs relating to these chemicals, the Report also includes significant activities of other organizations when that information is available. The Report does not attempt to include many important completed projects.

The Office of Toxic Substances would welcome information concerning other important on-going activities directed to these chemicals. Such information should be directed to the Chief, Special Chemicals Branch, Office of Toxic Substances.

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BENZENE

GENERAL STUDIES

Air Pollution - A preliminary assessment of air pollution problems from benzene has been completed. Further questions remain to be answered before regulatory decisions can be made. Studies to develop those answers are tentatively scheduled for completion by March 1977. Richard Johnson, EPA/OAQPS, (919) 688-8146, X-501.

HEALTH AND ECOLOGICAL EFFECTS AND ENVIRONMENTAL BEHAVIOR

Health Effects Review - The Committee on Toxicology of the National Academy of Sciences compiled and evaluated the literature on the health impacts of benzene. The June 1976, report also identified several areas needing further study. William Coniglio, EPA/OTS, (202) 755-0300.

CURRENT AND PROJECTED SOURCES, ENVIRONMENTAL LEVELS, AND EXPOSED POPULATIONS

Drinking Water Survey - Drinking water supplies in 113 cities are being surveyed for a number of organic constituents including benzene. Sampling and analyses are due to be completed in December 1976, and the report is expected in early 1977. Joseph Cotruvo, EPA/OWS, (202) 755-5643.

Analytical Methods - The available methods for measuring benzene levels in the various media are being reviewed. Recommendations for the adoption of standardized methods are expected in late 1976. Charles Plost, EPA/ORD, (202) 426-2026.

Sampling and Analysis - Samples taken near six manufacturing sites and 12 plants using benzene as an intermediate will be analyzed for concentrations of benzene. The report should be available by mid-1977. Vincent DeCarlo, EPA/OTS, (202) 755-0300.

CONTROL OPTIONS, REGULATORY ACTIONS, AND ATTENDANT IMPACTS

Water Pollution Assessment - Sixty-five chemicals and classes, including benzene, are being surveyed in connection with effluent discharges. Physical and chemical behavior, health and environmental effects, and sources and environmental levels will be documented over the next year. Appropriate

water quality criteria, effluent guidelines, toxic pollutant standards, and/or pretreatment requirements will then be established under the Federal Water Pollution Control Act in accordance with a court-approved schedule. John Carroll, EPA/OWPS, (202) 245-3042.

Workplace Standard - Revision to the benzene workplace standard is being considered by OSHA. The revised standard is expected to be proposed in December 1976. Brad Russell, OSHA, (202) 523-7184.

BIS(CHLOROMETHYL) ETHER

CURRENT AND PROJECTED SOURCES, ENVIRONMENTAL LEVELS, AND EXPOSED POPULATIONS

Air Pollution Assessment - Mathematical models based on industrial information have predicted that environmental levels of BCME are below detection limits and offer exposure potential more than two orders of magnitude below levels known to be hazardous. Richard Johnson, EPA/OAQPS, (919) 688-8146, X-501.

Sampling and Analysis - Monitoring will be started in early 1977, to determine if BCME is formed in areas where formaldehyde and chloride ions are available in waste streams. Vincent DeCarlo, EPA/OTS, (202) 755-0300.

CONTROL OPTIONS, REGULATORY ACTIONS, AND ATTENDANT IMPACTS

Water Pollution Assessment - Sixty-five chemicals and classes, including haloethers, are being surveyed in connection with effluent discharges. Physical and chemical behavior, health and environmental effects, sources, and environmental levels will be documented over the next year. The report, including recommended criteria, is scheduled to be published by July 1977. Appropriate water quality criteria, effluent guidelines, toxic pollutant standards, and/or pretreatment requirements will then be established under the Federal Water Pollution Control Act in accordance with a court-approved schedule. John Carroll, EPA/OWPS, (202) 245-3042.

Workplace - A survey of workplace environments (such as textile mills) where formaldehyde and chloride ions are available will determine if BCME is formed. If the formation of BCME occurs, recommendations for revisions to the OSHA standard for BCME will be made. Ben Dobbin, NIOSH, (531) 684-3255.

CADMIUM

HEALTH AND ECOLOGICAL EFFECTS AND ENVIRONMENTAL BEHAVIOR

Uptake in Humans - Cadmium has long been implicated in kidney disorders. A study to document the uptake mechanism and renal cortex levels is in progress. The report is due in early 1977. Edward Brooks, EPA/OTS, (202) 755-4880.

Uptake and Translocation in Food Chain - A variety of studies will report on uptake of cadmium from sludge and other sources by plants and animals. A report on body burden limits and other factors needed to support regulatory decisions will be prepared. Donald Ehreth, EPA/ORD, (202) 426-0264.

Carcinogenesis - A special study of the carcinogenic potential of cadmium by intramuscular injection in three rodent species was conducted by NCI. Sidney Siegel, NCI, (301) 496-3503.

Effects on Protein Synthesis - An investigation is underway to characterize adverse effects on protein synthesis and possible induction by heavy metals including cadmium. Dr. Robert Owens, NIEHS, (919) 549-8411, X-3358.

CURRENT AND PROJECTED SOURCES, ENVIRONMENTAL LEVELS, AND EXPOSED POPULATIONS

Analytical Methods - The available methods for measuring cadmium levels in the various media are being reviewed. Recommendations for the adoption of standardized methods are expected in the fall of 1976. Charles Plost, EPA/ORD, (202) 426-2026.

Analysis of Human Tissues - Analytical techniques to measure cadmium levels in human tissues are being developed. Vincent DeCarlo, EPA/OTS, (202) 755-0300.

Environmental Levels - The technical literature is being reviewed to determine the extent and adequacy of monitoring data. A decision will be made when the results have been compiled as to whether further monitoring should be undertaken. Vincent DeCarlo, EPA/OTS, (202) 755-0300.

Cadmium in a Metropolitan Area - A survey of levels and sources of cadmium in environmental substrates in the

Washington, D. C., Metropolitan Area is in progress. A report is expected in early 1977. Edward Brooks, EPA/OTS, (202) 755-4880.

SUBSTITUTES, CONTROL TECHNOLOGY, AND RELATED COSTS AND ECONOMIC FACTORS

Wastewater Treatment - Methods available for treating cadmium-containing wastewater have been reviewed for efficacy, costs, and benefits. Kent Ballantine, EPA/OWPS, (202) 245-3030.

Substitute Material - A Navy Department proposal to substitute aluminum for cadmium in electroplating is scheduled to be evaluated during the fall of 1976. Edward Brooks, EPA/OTS, (202) 755-4880.

CONTROL OPTIONS, REGULATORY ACTIONS, AND ATTENDANT IMPACTS

Water Pollution Assessment - Sixty-five chemicals and classes, including cadmium, are being surveyed in connection with effluent discharges. Physical and chemical behavior, health and environmental effects, and sources and environmental levels will be documented over the next year. The report, including recommended criteria, is scheduled to be published by July 1977. Appropriate water quality criteria, effluent guidelines, toxic pollutant standards, and/or pretreatment requirements will then be established under the Federal Water Pollution Control Act in accordance with a court-approved schedule. John Carroll, EPA/OWPS, (202) 245-3042.

Workplace - A criteria document that is expected to recommend tightening the OSHA standards for workplace exposure to cadmium and its compounds is scheduled for release before the end of 1976. Keith Jacobson, NIOSH, (301) 443-2130.

Air Pollution Assessment - Information that has become available since 1972 (when a Preferred Standard Path Analysis was prepared) is being collected and analyzed to determine if emission or performance standards under the Clean Air Act should be developed. Richard Johnson, EPA/OAQPS, (919) 688-8146, X-501.

HYDROGEN SULFIDE

GENERAL STUDIES

STAR Report - A Scientific and Technical Assessment Review of hydrogen sulfide will be prepared after the health hazard assessment by the National Academy of Sciences has been received in January 1977. Orin Stopinski, EPA/ORD, (919) 549-8411, X-266.

HEALTH AND ECOLOGICAL EFFECTS AND ENVIRONMENTAL BEHAVIOR

Health Hazard Assessment - The National Academy of Sciences is reviewing the health hazards associated with hydrogen sulfide. The report is due in January 1977. John Redman, NAS, (202) 393-8100.

CURRENT AND PROJECTED SOURCES, ENVIRONMENTAL LEVELS, AND EXPOSED POPULATIONS

Analytical Methods - The available methods for measuring hydrogen sulfide levels in the various media are being reviewed. Recommendations for the adoption of standardized methods are expected in late 1976. Charles Plost, EPA/ORD, (202) 426-2026.

Automotive Emissions - Hydrogen sulfide is one of the exhaust components that will be measured in a series of tests of a variety of exhaust control systems. Normal and malfunction conditions will be simulated. The report is due in late 1977. Joseph Somers, EPA/MVEL, (313) 668-4321.

SUBSTITUTES, CONTROL TECHNOLOGY, AND RELATED COSTS AND ECONOMIC FACTORS

Automotive Emissions - Improperly adjusted automobiles equipped with catalysts can emit hydrogen sulfide. EPA is encouraging that automobiles be adjusted rather than that catalyst devices be removed or overidden. Dealers, zone representatives, and manufacturers are consulted in these efforts. Michael Walsh, EPA/OE, (202) 755-2874.

CONTROL OPTIONS, REGULATORY ACTIONS, AND ATTENDANT IMPACTS

Air Pollution Assessment - Two preliminary air pollution assessment reports are being prepared by OAQPS. The first will focus on the potential problems associated with normal

industrial and catalyst operations. The second will document accidental release episodes, identify potential control mechanisms, and recommend EPA actions. Thomas Fagans, EPA/OAQPS, (919) 688-8146, X-501.

State Accidental Release Standard - Workplace safety regulations governing recovery operations at capped gas wells and requiring recovery operators to develop and file contingency plans for notification and evacuation procedures associated with accidental releases at these wells have been imposed. James Herring, State of Texas, Railroad Commission, Oil and Gas Division, (512) 475-4639.

Accidental Release Alert - As a result of several incidents in which workers were fatally injured, a "Work Alert" on accidental release of hydrogen sulfide and recommended work practices and monitoring measures was issued in September 1976. Roscoe Moore, NIOSH, (301) 443-3843.

Workplace - A criteria document will outline hazards of and control measures for carbon disulfide and hydrogen sulfide. Standards for both materials, separately and together, will be recommended. This report should be forwarded to OSHA in late March 1977, and published in April 1977. Herbert Venable, NIOSH, (301) 433-4216.

MERCURY

GENERAL STUDIES

Manufacturing and Use Data - Data on the manufacture and use of mercury during 1975, are being compiled for the Organization for Economic Cooperation and Development (OECD). Abstracts of that body's reports are being prepared for inclusion in a computerized information system to be managed by OECD. Elbert Dage, EPA/OTS, (202) 755-2110.

HEALTH AND ECOLOGICAL EFFECTS, AND ENVIRONMENTAL BEHAVIOR

Carcinogenesis - A study was conducted to determine if mercury and/or methyl mercury chloride demonstrated carcinogenic potential when administered intramuscularly to rats. The findings will be published in the Journal of the National Cancer Institute. Sidney Siegel, NCI, (301) 496-3503.

Health Effects - A variety of epidemiological studies, as well as studies on toxicity mechanisms, synthesis of chelating agents, and impacts on protein synthesis, are being conducted. Robert Owens, NIEHS, (919) 549-8411, X-3358.

Environmental Release and Fate - Sampling of mercurial releases at the Four Corners powerplant has identified low levels of various forms of mercury at various distances from the plant. Two additional years of activity will attempt to further refine analytical procedures, more closely follow environmental transport, and identify the ultimate fate. Bruce Wiersma, EPA/ORD, (702) 736-2969.

CURRENT AND PROJECTED SOURCES, ENVIRONMENTAL LEVELS, AND EXPOSED POPULATIONS

Mercury in a Metropolitan Area - A survey of levels and sources of mercury in environmental substances in the Washington, D.C., Metropolitan Area is in progress. A report is expected in early 1977. Edward Brooks, EPA/OTS, (202) 755-4880.

Environmental Levels - The technical literature is being reviewed to document previous monitoring activities. The results will be evaluated for adequacy. If needed, additional monitoring will be undertaken. Vincent DeCarlo, EPA/OTS, (202) 755-0300.

Analytical Methods - The available methods for measuring mercury levels in the various media are being reviewed. Recommendations for the adoption of standardized methods are expected in late 1976. Charles Plost, EPA/ORD, (202) 426-2026.

CONTROL OPTIONS, REGULATORY ACTIONS, AND ATTENDANT IMPACTS

Air Pollution Assessment - A preliminary assessment of air pollution problems associated with mercury and mercurial compounds is being prepared. When completed, a decision on the need for further study and/or regulatory action will be made. John O'Connor, EPA/OAQPS, (919) 688-8146, X-355.

Water Pollution Assessment - Sixty-five chemicals and classes, including mercury, are being surveyed in connection with effluent discharges. Physical and chemical behavior, health and environmental effects, and sources and environmental levels will be documented over the next year. The report, including recommended criteria, is scheduled to be published by July 1977. Appropriate water quality criteria, effluent guidelines, toxic pollutant standards, and/or pretreatment requirements will then be established under the Federal Water Pollution Control Act in accordance with a court-approved schedule. John Carroll, EPA/OWPS, (202) 245-3042.

PLATINUM

GENERAL STUDIES

Catalyst Research Program - As catalytic converters have come into use, a number of questions about the potential hazards of platinum have been raised. Sampling and analytical methods have been developed to identify platinum in environmental media and biotic specimens. The environmental behavior, including methylation and demethylation, of platinum has been studied. The toxicological effects, including mutagenic potential, behavioral impacts, and allergenic responses of platinum are being studied. Preliminary reports from these studies are included in a symposium report and a series of annual reports. Vandy Duffield, EPA/ORD, (919) 549-8411, X-2525.

CURRENT AND PROJECTED SOURCES, ENVIRONMENTAL LEVELS, AND EXPOSED POPULATIONS

Analytical Methods - The available methods for measuring platinum levels in the various media are being reviewed. Recommendations for the adoption of standardized methods are expected in late 1976. Charles Plost, EPA/ORD, (202) 426-2026.

POLYNUCLEAR AROMATIC HYDROCARBONS (PNA's)

CURRENT AND PROJECTED SOURCES, ENVIRONMENTAL LEVELS, AND EXPOSED POPULATIONS

Analytical Methods - The available methods for measuring PNA levels in the various media are being reviewed. Recommendations for the adoption of standardized methods are expected in late 1976. Charles Plost, EPA/ORD, (202) 426-2026.

Vehicular Emissions - Exhaust from light- and heavy-duty diesel-powered vehicles will be characterized for a variety of hydrocarbon components including certain PNA's. The report is due in July 1977. Joseph Somers, EPA/MVEL, (313) 668-4321.

Drinking Water Survey - Drinking water supplies in 113 cities are being surveyed for a number of organic constituents including several PNA's. Sampling and analyses are due to be completed in December 1976 and the report is expected in early 1977. Joseph Cotruvo, EPA/OWS, (202) 755-5643.

CONTROL OPTIONS, REGULATORY ACTIONS, AND ATTENDANT IMPACTS

Water Pollution Assessment - Sixty-five chemicals and classes, including polynuclear aromatic hydrocarbons, are being surveyed in connection with effluent discharges. Physical and chemical behavior, health and environmental effects, and sources and environmental levels will be documented over the next year. The report, including recommended criteria, is scheduled to be published by July 1977. Appropriate water quality criteria, effluent guidelines, toxic pollutant standards, and/or pretreatment requirements will then be established under the Federal Water Pollution Control Act in accordance with a court-approved schedule. John Carroll, EPA/OWPS, (202) 245-3042.

TRICHLOROETHYLENE

GENERAL STUDIES

Hazard Assessment - A two phase hazard assessment of trichloroethylene is underway. The first phase consists of a survey of production, sources, environmental levels, health effects, ecological impacts, and possible controls. The second phase consist of an assessment of the economic and environmental impacts of control options. George Semeniuk, EPA/OTS, (202) 755-2110.

HEALTH AND ECOLOGICAL EFFECTS, AND ENVIRONMENTAL BEHAVIOR

Carcinogenesis Bioassay - Positive findings of carcinogenesis have been reported based on high-dose gavage studies. An inhalation study, related to real-world exposures, is due to begin late in 1976. Dr. Cipriano Cueto, NCI, (301) 496-4875.

CURRENT AND PROJECTED SOURCES, ENVIRONMENTAL LEVELS, AND EXPOSED POPULATIONS

Analytical Methods - The available methods for measuring trichloroethylene levels in the various media are being reviewed. Recommendations for the adoption of standardized methods are expected in late 1976. Charles Plost, EPA/ORD, (202) 426-2026.

Monitoring Data - Samples taken from selected locations (6 producers; 6 major users) will be analyzed for trichloroethylene levels. Vincent DeCarlo, EPA/OTS, (202) 755-0300.

Drinking Water Survey - Drinking water supplies in 113 cities are being surveyed for a number of organic constituents including trichloroethylene. Sampling and analyses are due to be completed in December 1976, and the report is expected in early 1977. Joseph Cotruvo, EPA/OWS, (202) 755-5643.

CONTROL OPTIONS, REGULATORY ACTIONS, AND ATTENDANT IMPACTS

Workplace Standard - In 1974, NIOSH published a criteria document on trichloroethylene. On October 20, 1975, a proposal to revise the existing standard was published. On April 16, 1976, a notice that consideration was being given to consolidating the standard with those for perchloroethylene and methyl chloroform was published in the Federal Register. Grover Wrenn, OSHA, (202) 523-7081.

Air Pollution Assessment - Based on an air pollution assessment, it has been determined that regulation of trichloroethylene is not warranted at this time. Richard Johnson, EPA/OAQPS, (919) 688-8146, X-501.

Water Pollution Assessment - Sixty-five chemicals and classes, including trichloroethylene, are being surveyed in connection with effluent discharges. Physical and chemical behavior, health and environmental effects, and sources and environmental levels will be documented over the next year. The report, including a recommended criteria, is scheduled to be published by July 1977. Appropriate water quality criteria, effluent guidelines, toxic pollutant standards, and/or pretreatment requirements will then be established under the Federal Water Pollution Control Act in accordance with a court-approved schedule. John Carroll, EPA/OWPS, (202) 245-3042.

TRIS(2,3-DIBROMOPROPYL) PHOSPHATE

CURRENT AND PROJECTED SOURCES, ENVIRONMENTAL LEVELS, AND EXPOSED POPULATIONS

Analytical Methods - The available methods for measuring Tris levels in the various media are being reviewed. Recommendations for the adoption of standardized techniques are expected in late 1976. Charles Plost, EPA/ORD, (202) 426-2026.

Analytical Methods - Methods are being developed for the analysis of Tris in human tissue samples (including body fluid). These methods will be applied in an effort to determine if Tris is taken up by the human body from treated fabrics and clothing. Vincent DeCarlo, EPA/OTS, (202) 755-0300.

Sampling and Analysis - Samples taken in an EDB monitoring activity will also be analyzed for levels of Tris. Vincent DeCarlo, EPA/OTS, (202) 755-0300.

HEALTH AND ECOLOGICAL EFFECTS AND ENVIRONMENTAL BEHAVIOR

Carcinogenesis - The carcinogenic potential of Tris when administered orally to rodents is being determined. Cipriano Cueto, NCI, (301) 496-4875.

Hazard Assessment - Using the Ames bioassay, Tris was shown to be a potential mutagen. These findings were forwarded to CPSC in the Fall of 1975. Based on these results, EDF petitioned CPSC to restrict the use of this substance as a flame retardant in fabrics. CPSC is preparing to conduct further tests and is awaiting the results of NCI's tests before making a final decision. Barbara Ostrow, CPSC, (301) 492-6477.

ABBREVIATIONS OF ORGANIZATIONS

Environmental Protection Agency

MVEL	-	Motor Vehicle Emission Laboratory
OAQPS	-	Office of Air Quality Planning & Standards
OE	-	Office of Enforcement
ORD	-	Office of Research & Development
OTS	-	Office of Toxic Substances
OWPS	-	Office of Water Planning & Standards
OWS	-	Office of Water Supply

Other Organizations

CPSC	-	Consumer Products Safety Commission
NAS	-	National Academy of Science
NCI	-	National Cancer Institute
NIEHS	-	National Institute for Environmental Health Sciences
NIOSH	-	National Institute for Occupational Safety and Health
OSHA	-	Occupational Safety & Health Administration